

Original Research

Assessment of effect of dexamethasone among patients undergoing dental extraction for removal of impacted third molar

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ABSTRACT:

Background: Assessment of effect of dexamethasone among patients undergoing dental extraction for removal of impacted third molar. **Materials & methods:** Study population in the present study included evaluation of 100 subjects scheduled to undergo surgical removal of impacted third molar. Complete demographic and clinical details of all the patients were obtained. Clinical examination was carried out of all the subjects. Only those patients were enrolled which were scheduled to undergo impacted third molar extraction. All the subjects were randomly divided into two study groups with 50 participants in each group as follows: Group A: Administration of Pre-operatively Intramuscular Dexamethasone, and Group B: Administration of Post-operatively Intramuscular Dexamethasone. All the surgical procedures were carried out under the hands of skilled and experienced oral surgeons. Routine post-operative home care instruction was given to all the patients along with antibiotic coverage. Patients were recalled on the 7th day and sutures were removed. Clinical examination was done. Data was analyzed by using SPSS software. **Results:** During the postoperative 1st day follow-up, mean swelling among the subjects of group A and group B was 12.8 cm and 14.9 cm respectively. During the postoperative 3rd day follow-up, mean swelling among the subjects of group A and group B was 12.9 cm and 15.2 cm respectively. During the postoperative 7th day follow-up, mean swelling among the subjects of group A and group B was 11.8 cm and 11.9 cm respectively. Significantly higher swelling was seen among subjects of group B. **Conclusion:** By pre-operative administration of intramuscular injection of dexamethasone better post-operative therapeutic effects are achieved as compared to post-surgical administration in impacted third molar surgeries.

Key words: Dexamethasone, Impacted, Molar

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INTRODUCTION

Lower third molar removal is a common oral surgical practice performed by oral and maxillofacial surgeons. The procedure can cause trauma to the highly vascularized loose connective tissue area, and may cause acute inflammation with intense discomfort, as well as pain during the immediate post-operative phase. Postoperative pain is a subjective sensation, and depends on various factors such as patient age, sex, anxiety, and surgical difficulty. The pterygomandibular space is highly vascular with loose areolar tissue, and is one of the spaces related to the lower third molar region. Trismus is one of the clinical symptoms of pterygomandibular space infection. With good surgical technique, gentle manipulation of the tissue and analgesic administration after surgery can reduce

postoperative side effects, although pain is not controlled completely in most cases.¹⁻³

Corticosteroids have potent anti-inflammatory activity, and have been used at different dosages and through various routes of administration to lessen the inflammatory effects of third molar surgical removal.^{4, 5} Dexamethasone has proven itself to be one of the most effective anti-inflammatory agents and this has been a prime reason for its use following the minor and the major surgical procedures in the field of oral and maxillofacial surgery across the globe in the last 3-4 decades.^{6, 7} Hence, the present study was undertaken for assessing of effect of dexamethasone among patients undergoing dental extraction for removal of impacted third molar.

MATERIALS & METHODS

The present study was undertaken for assessing of effect of dexamethasone among patients undergoing dental extraction for removal of impacted third molar. Study population in the present study included evaluation of 100 subjects schedule to undergo surgical removal of impacted third molar. Complete demographic and clinical details of all the patients were obtained. Clinical examination was carried out of all the subjects. Only those patients were enrolled which were scheduled to undergo impacted third molar extraction. All the subjects were randomly divided into two study groups with 50 participants in each group as follows: Group A: Administration of Pre-operatively Intramuscular Dexamethasone, and Group B: Administration of Post-operatively Intramuscular Dexamethasone. All the surgical procedures were carried under the hands of skilled and experienced oral surgeons. Routine post-operative home care instruction was given to all the patients along with antibiotic coverage. Patients were recalled on the 7th day and sutures were removed.

Clinical examination was done. Data was analyzed by using SPSS software.

RESULTS

Mean age of the subjects of group A and group B was 27.1 years and 26.2 years respectively. Majority population of both the study groups was males (58 percent in group A and 62 percent in group B). During the preoperative assessment, mean swelling among the subjects of group A and group B was 13.5 cm and 13.1 cm respectively. During the postoperative 1st day follow-up, mean swelling among the subjects of group A and group B was 12.8 cm and 14.9 cm respectively. During the postoperative 3rd day follow-up, mean swelling among the subjects of group A and group B was 12.9 cm and 15.2 cm respectively. During the postoperative 7th day follow-up, mean swelling among the subjects of group A and group B was 11.8 cm and 11.9 cm respectively. Significantly higher swelling was seen among subjects of group B.

Graph 1: Descriptive results of age (years)

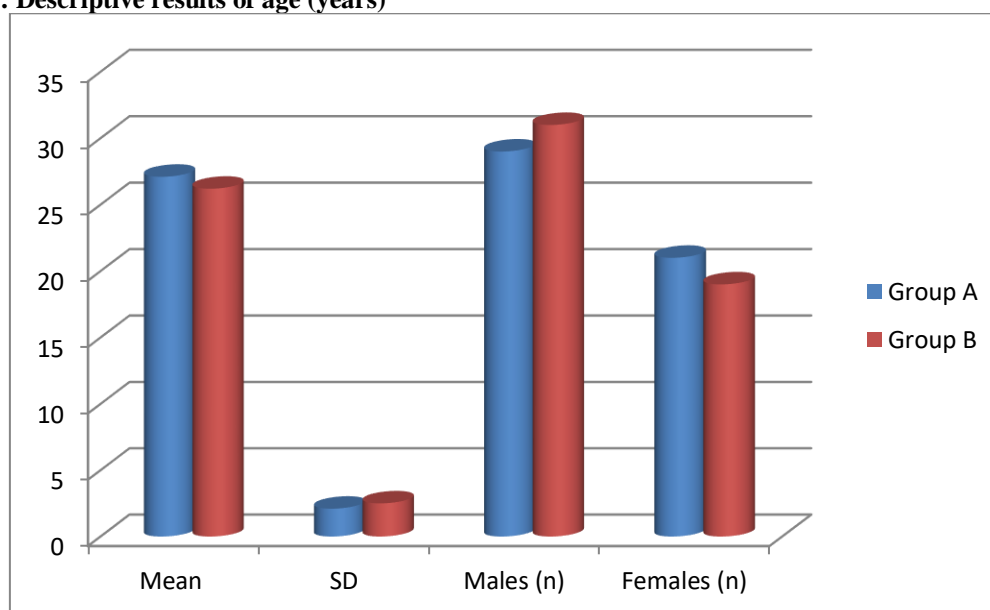


Table 1: Descriptive statistics for swelling (cm)

Swelling	Group A	Group B	p- value
Pre-operative swelling (cm)	13.5	13.1	0.11
Post-operative 1 st day swelling (cm)	12.8	14.9	0.01*
Post-operative 3 rd day swelling (cm)	12.9	15.2	0.01*
Post-operative 7 th day swelling (cm)	11.8	11.9	0.85

*: Significant

DISCUSSION

Preemptive analgesia involves treatment that prevents the establishment of central sensitization, which is caused by peripheral nociceptor activity secondary to surgical trauma. In the absence of local anesthesia, this process begins at the time of incision and continues during the intraoperative and postoperative

periods. Preemptive analgesia has been studied since the beginning of the 20th century. In the field of dentistry, it is usually used in isolation or in combination with 4 groups of drugs: local anesthetics, steroidal anti-inflammatories (corticosteroids), nonsteroidal anti-inflammatories (NSAIDs), and opioid analgesics.⁷⁻⁹

Dexamethasone and methylprednisolone are the most commonly used corticosteroids for preemptive analgesia. NSAIDs, such as diclofenac and ibuprofen, and central-acting analgesics, such as tramadol, have also been studied when used preemptively in surgical procedures involving third molars. The effectiveness of preemptive analgesia with the use of corticosteroids and NSAIDs has been demonstrated in previous studies that used either a placebo or different doses of the medication in question. Nevertheless, there is no consensus in the literature concerning the question of which medication is the most effective when used preemptively to decrease postoperative pain for surgical procedures involving lower third molars.⁷⁻¹⁰

Mean age of the subjects of group A and group B was 27.1 years and 26.2 years respectively. Majority population of both the study groups was males (58 percent in group A and 62 percent in group B). During the preoperative assessment, mean swelling among the subjects of group A and group B was 13.5 cm and 13.1 cm respectively. During the postoperative 1st day follow-up, mean swelling among the subjects of group A and group B was 12.8 cm and 14.9 cm respectively. Nair RB et al evaluate the relative ability of 4 mg dose of intraoperative dexamethasone, administered submucosally, to reduce the postoperative discomfort after third molar surgery. A total of 100 patients requiring surgical removal of a single mandibular third molar were included. The experimental group (50) received dexamethasone 4 mg as submucosal injection and control group (50) received no drugs. The maximum interincisal distance and facial contours were measured at baseline and at postsurgery days 2 and 7. The measurement of pain was done using visual analog scale (VAS). None of the patients developed wound infection or any serious postoperative complications. Postoperative edema tended to be less severe on the second postoperative day in the experimental group and the result was statistically significant. There were no significant differences in the reduction of pain and trismus between the two groups studied. Submucosal administration of dexamethasone sodium phosphate (4 mg) results in reduction of postoperative edema, comparable with or greater than other routes of administration. Presumably, a higher effective drug concentration at the site of injury without loss due to distribution to other compartments may be achieved, and the submucosal route is convenient for both the surgeon and the patient. Submucosal route of administration of dexamethasone (4 mg) is effective in reducing postoperative discomfort after third molar surgeries.¹⁰ During the postoperative 3rd day follow-up, mean swelling among the subjects of group A and group B was 12.9 cm and 15.2 cm respectively. During the postoperative 7th day follow-up, mean swelling among the subjects of group A and group B was 11.8 cm and 11.9 cm respectively. Significantly higher

swelling was seen among subjects of group B. Klongnoi B et al investigated the effects of dexamethasone intramuscular injection 1h preoperatively, in reducing facial swelling, pain and trismus after lower impacted third molar (LITM) surgery. Twenty healthy Thai patients with both LITM surgical extraction were enrolled in the study. The washout period was 1 month after the first operation. Clinical assessment of the facial swelling, pain and trismus were measured before and after operation for 7 days and the patient's total analgesic consumption was recorded. The level of significance used in the statistical decisions was $P < 0.05$. Preoperative intramuscular injection of single-dose 8mg dexamethasone reduced postoperative swelling after LITM surgical extraction significantly on the second postoperative day, but immediately after surgery and on day 7 after the surgical extraction, no significant difference was found between the dexamethasone and control groups. Dexamethasone also reduced postoperative pain after LITM surgical extraction significantly on postoperative days 2 and 7. Additionally, the amount of paracetamol decreased significantly. There were no significant differences in trismus in the study and control groups 7 days after LITM operation.¹¹

CONCLUSION

By pre-operative administration of intramuscular injection of dexamethasone better post-operative therapeutic effects are achieved as compared to post-surgical administration in impacted third molar surgeries.

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